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PREHISTORIC ARCHAEOLOGICAL COLLECTIONS FROM MASSACHUSETTS:
A REPORT ON THE PEABODY MUSEUM OF SALEM

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CONTENTS

	Page
Introduction	1
History of the Peabody Museum of Salem	2
Past Research in Northeastern Massachusetts	5
Topography and Environment	13
Collection Bias	17
Collection Analysis: General Artifact Categories	22
Collection Analysis: Summary of Temporal/Cultural Phases	29
Specific Sites and Research Potential	38
Management Recommendations	43
Summary	45
Tables and Appendices	47
Sources Cited	53

I. Introduction

The analysis and computer-coded inventory of the Peabody Museum of Salem represents the sixth study of its kind which the prehistoric survey team has completed. Previously, the archaeological collections of the Bronson Museum (Attleboro), Peabody Museum (Harvard University), the R. S. Peabody Foundation Museum (Andover), the Benjamin Smith collection (Concord), and the Roy Athearn collection (Fall River) have been analyzed and entered into a computerized file.

The primary goal of the survey, which for the past two and one half years has been sponsored by the Massachusetts Historical Commission, is to develop a standardized filing system and data base upon which informed decisions can be formulated concerning the management and preservation of the prehistoric cultural resources of the Commonwealth. The archaeological site files, computer inventories, and maps of the MHC represent the single most comprehensive facility in Massachusetts which can be used to assess the impacts of proposed construction projects on known or potential archaeological resources. To date, the inventory has greatly increased the number of known sites within the first study area, Eastern Massachusetts, and has added considerable depth to existing records. The major benefit has been to increase the MHC's ability to protect and/or identify areas of archaeological sensitivity, thus greatly enhancing its management capabilities. It is also hoped that contributions can be made to increase our understanding of prehistoric occupation in Eastern Massachusetts and that poorly known areas and areas with research potential can be identified.

The analysis of the Peabody Museum of Salem collection is a welcome addition to MHC's survey. The prehistoric survey team wishes to thank the Museum staff for their assistance during the course of the study.

II. History of the Peabody Museum of Salem

A brief review of the historic development of the Peabody Museum of Salem provides considerable insight into the nature of the archaeological collection presently curated there. The Museum traces its history to 1848, when the Essex Institute was formed with the merger of the Essex County Historical Society and the Essex County Natural History Society, bringing together some of the most prominent local naturalists and horticulturalists of the day. Under the early directorship of Dr. Henry Wheatland, the Institute was divided into historical, horticultural and natural history sections, reflecting the strong interests of its members. Prominent among these were such 19th century "Renaissance men" as Frederick W. Putnam, Edward S. Morse, John R. Robinson, and John H. Sears.

In 1867, philanthropist George Peabody established the Peabody Academy of Science in Salem, and purchased the East India Marine Hall for the new organization. Between 1866 and 1867 the Essex Institute transferred its archaeological collection to the Academy, providing it with a firm archaeological focus from its inception.

Owing to its early association with the vibrant mercantile industry of Salem, the Academy amassed a sizeable collection of exotic artifacts

from around the world. Sea captains, sailors, and dilettantes returning from remote corners of the world donated their collected curios to the museum. Materials from North America, including artifacts from the large aboriginal burial mounds in the Midwestern United States, also came to the Academy at this time. Often these donations consisted of single specimens; some, however, were large private collections.

Almost from the beginning, much of the Academy's archaeological collection was derived from Eastern Massachusetts. Located as it was, in a strategic position northeast of Boston, it became the natural place for collectors and farmers in eastern Essex County to donate their finds. Today, the Peabody Museum of Salem curates hundreds of such donated specimens. Many of these are unusual or finely made artifacts that were collected in the 19th and early 20th centuries.

It was under the leadership of three men - Frederick W. Putnam, a naturalist by training and the first Director of the Academy, Edward S. Morse, considered the founder of archaeology in Japan, and John H. Sears, geologist and curator - that the Peabody Academy of Science became actively involved in local archaeology. Putnam, who was influenced by Jeffries Wyman and Louis Agassiz at Harvard, began to catalogue the archaeological materials of the area, and coordinated excavations at several local sites. The Academy's excavations generally focused on the numerous shell middens along the coast and the occasional aboriginal burial inadvertently encountered during construction. Occasional papers appeared in the American Naturalist, the Bulletin of the Essex Institute and the Annual Report of

the Peabody Museum of Archaeology and Ethnology, Cambridge. Public lectures were another important means of disseminating information at this time. The artifacts collected by these intrepid scientists form the core of the present archaeological collection of the Peabody Museum of Salem.

By the 1880s, Morse (Director of the Academy from 1879-1915) decided to change its focus. He elected to specialize in the history and natural history of Essex County rather than duplicate the large world-wide collections of other local institutions such as the Boston Society of Natural History and the Museum of Comparative Zoology. In 1889 the Academy moved into the newly constructed East Hall where Morse's Japanese collection and the Asian collection of Charles G. Weld became permanent exhibitions. At the same time, John Robinson, botanist and Keeper of the Herbarium, began to develop the Academy's maritime history resources. By the beginning of the 20th century, the Academy distinctly focused on Ethnology, Maritime History, and Natural History. In 1915 the Academy changed its name to the Peabody Museum of Salem, reflecting its new focus.

With the passing of the Putnam, Morse, Robinson and Sears era in the early 20th century, actual participation in local archaeology by the Museum waned. Although the Museum forged excellent relations with local amateurs (most notably such major collectors as John C. Clark, William Eldridge and the Vaccaro brothers), it took a decidedly passive posture toward local archaeology.

Today, the Museum has begun once more to take an active role in local archaeology. A re-analysis of the Bull Brook site is underway, and a large

number of local sites are being identified from collector records and verified by limited field testing. Museum staff have also undertaken some salvage excavations and continue to accession donations from local collectors. It is anticipated that as the collection continues to grow, and new sites are identified and verified, the Peabody Museum of Salem collection's value as a cultural resource will increase.

Owing to its origin as an ethnographic museum, most of the Peabody Museum of Salem's archaeological material is presently curated in the manner of an ethnographic collection. Specimens are, for the most part, stored according to artifact type; only a small proportion of the collection is arranged according to provenience. This makes analysis somewhat time consuming as site assemblages must be put together from a number of separate storage cabinets. Combined storage of large and small specimens need not necessarily be detrimental to the specimens, and their storage as site assemblages is certainly the preferred method of curation for archaeological materials.

III. Past Research in Northeastern Massachusetts

Much of Essex County, particularly along the Atlantic coast from Marblehead to Newburyport and the lower Merrimack Valley, has witnessed over 175 years of archaeological activity. Relatively few substantive contributions have been published during this time, however, and despite a known site density estimated to be among the highest in east-central New England (Dincauze and Meyer 1977:11), our existing state of knowledge concerning the lifeways of the prehistoric inhabitants of this area remains deficient. In retrospect, this situation is understandable.

Barber (1979:23) suggests that reference to the earliest excavation of aboriginal artifacts in Essex County is found in the diary of John Lord, who noted that in 1790 a Native burial was encountered during a construction project in Newburyport. It was not until the mid to late 19th century, however, that activity even remotely resembling archaeology was undertaken on a serious scale. The archaeological activity which occurred in Essex County during this time closely paralleled developments in Europe and other parts of the New World, where the Victorian public was still disputing the shocking new theories of humanity's primate origins. The antiquity of man was just beginning to be recognized and accepted as fact among certain scholars, and museums in Britain, Europe and America began serious collecting of artifacts from all over the world (Rouse 1972:31).

The philosophy and orientation of archaeological study and of museums during this time was decidedly different than today. Most of the early collectors were "local antiquaries", people who studied archaeological remains, often stray objects found accidentally, to help understand the past (Daniel 1967:35). During this time museums such as the Peabody Museum of Archaeology and Ethnology at Harvard and the Peabody Museum of Salem were essentially storage facilities for artifacts. Artifacts were valued as curios, and above all, as objects of the remote past; therefore they were automatically considered to have intrinsic value.

In coastal Essex County, the readily visible shell middens quickly became the focus of artifact collecting activities by museums and countless hobbyists. In 1867 Jeffries Wyman published a report on several shell middens which he and two Essex Institute colleagues had excavated that year

at the mouth of the Merrimack River in Salisbury and on Great Neck in Ipswich (Wyman 1867). In 1870 Alfred Osgood, who had assisted Wyman earlier, excavated an early Woodland site behind his own house in Newburyport (19-ES-280). Materials from this excavation are presently curated at the Peabody Museum of Salem.

By this time the Essex Institute was actively accessioning material donated by local farmers and other collectors. Hundreds of artifacts were received from such major local collectors as O. C. Wilcomb and Daniel Rugg, who appeared to favor shell middens in Ipswich, J. S. Dodge in Rowley, and F. A. and A. K. Ober, George B. Frazer, and Charles Perkins, whose collecting seems to have covered much of Essex County. The Museum also purchased a major collection from a local taxidermist, Nathaniel Vickary, who collected in the Salem, Lynn and Revere areas. Vickary's collection includes material from the Contact Period graves at Revere Beach (19-SU-1) (Hadlock 1949:67).

Perhaps the most prominent collectors of this period were the aforementioned members of the Essex Institute and later, the Peabody Academy of Science. J. H. Sears, John Robinson, E. S. Morse, and Frederick W. Putnam, together, separately, or in varying combinations, located many sites which they then excavated. This was the era of "museum outings" which sometimes involved excavations along the Essex County coast. As Hadlock (1949:63) pointed out: "These gentlemen made no pretense of being archaeologists and in no instance did they excavate an area which had not been previously disturbed and accidentally discovered by plowing or excavations for roads or other constructions. During the time that these men

were interested in the archaeology of Essex County, they worked on many important sites, removing only a portion of the burials and materials which were found." In 1882, Sears and Robinson excavated the Great Neck site, which was first investigated by Jeffries Wyman in 1867. That same year a party from the Essex Institute completely excavated a large (60 x 100 feet) shell midden on Treadwell's Island, across the Ipswich River from Great Neck. Included in the large assemblage were stone tools, ceramics and a human burial (Robinson 1882; Putnam 1882). Although considerable quantities of materials were entering the storerooms of the Academy, little of lasting significance was published. The information content of such articles as "The Manufacture of Soapstone Pots by the Indians of New England" (Putnam 1878) and "Descriptions of a Few Stone Knives found in Essex County, Massachusetts" (Putnam 1873) was poor. However, judged by the standards of their time, these "Renaissance men" were very much a product, and in the mainstream of, intellectual activity of the day.

Although men like Putnam, Sears, Morse and Robinson did much to popularize the subject, archaeology did not really take hold as a serious field of investigation until well into the 20th century. Little innovative research was conducted until the 1940s when Grassy Island and the Boylston St. Fishweir were excavated (Johnson and Raup 1947; Johnson 1942, 1949). Lacking the great mounds, earthworks and artifacts of the Midwestern and Southwestern United States, much of New England remained somewhat of a backwater area archaeologically.

Throughout the early part of the century, museums were still preoccupied with the description and classification of artifacts and cultures.

Much to the anguish of later archaeologists, burials became the focal point of artifact hunting, and countless graves were destroyed in an effort to accumulate artifacts (cf. Willoughby 1935). One of the greatest perpetrators of this type of activity was Warren King Moorehead, Director of Archaeology at the R. S. Peabody Foundation in Andover, who dominated much of the archaeological activity in Essex County for over 20 years. Between 1910 and 1930 Moorehead assembled a list of historic references, collectors and sites from the Merrimack region. The highly publicized survey of the Merrimack Valley that followed, representing one of the largest archaeological undertakings east of the Hudson River, culminated Moorehead's career. Despite the project's scope and scale, only one brief, preliminary report was ever published (Moorehead 1931). No records were kept, nor have been found to this day; site locations were extremely vague and analysis was simplistic even for its time. Moorehead's orientation was toward amassing quantities of artifacts, and he lamented the fact that so few graves were found during the survey (Moorehead 1931:76). He was often little more than a pot hunter, and Barber (1979:26) feels that Moorehead's work was the worst of any time period in the entire Northeast.

Ripley P. Bullen succeeded Moorehead at the R. S. Peabody Foundation, initiating a period from 1940 to 1950 which has been referred to as the "Bullen Renaissance" (Barber 1979:28). Bullen concentrated much of his research in western Essex County. The Shawsheen Valley Archaeological Survey, which he directed, generated a number of short articles (Bullen 1942, 1946a, 1946b, 1946c; Bullen and Hoffman 1944a, 1944b) and large portions of a major monograph titled, Excavations in Northeastern Massachusetts (Bullen 1949), which represents one of the most substantial archaeological publications about the area.

Bullen also conducted surveys and excavations on Great Neck, Ipswich, which he selected for study because it held potential for producing information relevant to the reconstruction of cultural history, which was his principal research orientation. Specifically, he hoped to compare past cultural changes on the coast with those he had postulated for the Shawsheen Valley; he also wished to recover the components of material culture that were only preserved in shell middens, such as those on Great Neck. Bullen's survey identified 18 separate prehistoric loci (cf. Bullen 1949:Fig. 14). Among these were the Neck Creek Shellheap, which also contained a flexed burial (Bullen and Burt 1947), and the Clarks Pond site, which was the subject of a comprehensive and insightful report (Bullen 1949). This work has withstood the test of time. Using modern analytical techniques, McManamon has reanalyzed the material from the Shawsheen River Valley Survey and identified a strong Middle Archaic component in the area (McManamon 1977).

Bullen was also instrumental in organizing the community of amateur archaeologists. He established the headquarters of the Massachusetts Archaeological Society at the R. S. Peabody Foundation in Andover. The Society's Northeast Chapter was very active during the 1940s, but this was short-lived. By the early 1950s, the headquarters and focus of the MAS had shifted to Attleboro and Southeastern Massachusetts.

Wendell S. Hadlock, noted for his research into the "Red Paint People" of Maine (Hadlock 1941; Hadlock and Stern 1948) also took an interest in Essex County, and wrote a series of articles describing unusual artifacts curated at the Peabody Museum of Salem. Included in these were a discussion

of a series of platform pipes from coastal Essex County (Hadlock 1947:49-52), a report on a cache of blades from Ipswich (Hadlock 1948), and an article on the Contact Period graves from Bessome's Pasture, Marblehead and Revere Beach (Hadlock 1949).

Throughout the 1950s, the most important archaeological activity in Essex County centered around the Bull Brook site in Ipswich (19-ES-80). The first serious investigations here were begun in 1950 by a group of skilled amateur archaeologists including William Eldridge and Antonio, Frank, Joseph, and Nicola Vaccaro. It was soon realized that this site contained the earliest conclusive evidence of human occupation in Massachusetts (Eldridge and Vaccaro 1952). Since that time, Bull Brook has been the subject of a number of articles and much speculation. Both Douglas Byers and Frederick Johnson of the R. S. Peabody Foundation frequently visited the site and participated in some excavations, but published nothing more substantial than a series of cursory articles (Byers 1954, 1955, 1957, 1959, n.d.). Douglas Jordan, then of Harvard University, wrote his dissertation on Bull Brook, but also disseminated little new information (Jordan n.d.). Today the site is the subject of renewed interest. John Grimes of the Peabody Museum of Salem is currently reanalyzing the entire assemblage. A recent publication of his preliminary findings suggests that significant new information will be forthcoming (Grimes 1980).

In recent years, in addition to the Bull Brook reanalysis, other interesting archaeological research has been conducted in Essex County. Russell Barber has investigated the reliability of site records in the Merrimack Valley, and has examined prehistoric subsistence strategies in

the Merrimack estuary (Barber 1978, 1979). An archaeological survey of Ipswich conducted by Boston University has utilized a variety of sources of information, including field testing, to discover, verify, or otherwise document close to 100 prehistoric sites (Starbuck et al. 1979:137). The most extensive recent field project in Essex County has been conducted at the Shattuck Farm site in Andover (19-ES-196). A survey of this threatened location has identified seven previously unknown and undisturbed sites, including occupations dating from the Middle Archaic through the Late Woodland periods (Mahlstedt 1981). Results of the excavations conducted at Shattuck Farm are being analyzed and will be reported shortly. Over 30 Cultural Resource Management Studies have been undertaken in the past decade for coastal Essex County; however, this work has been of uneven quality and has added little to our knowledge of the region's prehistory.

A large part of the archaeological activity in southeastern Essex County has been the work of amateurs. During the present century an interesting network of collectors has developed, through which information concerning specific site locations, prehistoric artifacts and collecting and record-keeping techniques has been passed on from one to another. The central figure in this network, the late John C. Clark, has accounted for a significant portion of the material from Essex County which is curated at the museum. Clark learned from and was influenced directly or indirectly by Sears, Putnam, Robinson and Morse, as well as Ernest E. Tyzzer, his contemporary, who collected and precisely documented thousands of prehistoric artifacts from a number of interesting sites in the Wakefield/Saugus area. Tyzzer's important collection is presently curated at the R. S. Peabody

Foundation Museum in Andover. Both men were most active during the first half of the 20th century: Tyzzer during the 1930s and 1940s and Clark from 1902 to 1935. Clark, and to a lesser extent Tyzzer, in turn influenced their proteges William Eldridge, the Vaccaro brothers, and several others.

While many sites and hundreds of artifacts were collected by Clark, his records and site locational information were often vague. On the other hand, his pupils, Eldridge in particular, have maintained their own records of artifacts and site information that are much more precise. Eldridge, currently employed on the staff of the Museum, is recording his considerable knowledge for its files. The amount of information he has quietly accumulated is dramatically illustrated by the results of the inventory. Over 175 new sites, many of which were located by Eldridge, have been added to the MHC files. The Salem and Beverly areas, virtually unknown prior to the inventory, now contain dozens of identified sites. Although many of these sites are still poorly known, the amount of information has substantially increased.

IV. Topography and Environment

The materials inventoried at the Peabody Salem Museum were, for the most part, collected in Essex County, Massachusetts. Not all parts of the county are equally represented; the majority of inventoried artifacts and most of the sites from which they come are located in the southeastern part of the county between the Merrimack and Saugus rivers. They are generally derived from within ten miles of the coast, and are primarily concentrated in the towns of Salem, Ipswich, Danvers, Beverly, and Marblehead.

The topography of this area is largely the result of glacial and post-glacial processes. Inland areas are characterized by features of glacial deposition such as drumlins, kames, eskers and outwash plains, as well as numerous kettle ponds and swamps. Drainage is complex, as is typical of post-glacial landscapes. The resulting topography typically consists of low hills and plains dissected by a maze of swamps, ponds and small streams. Many of these interior bodies of water have been modified by the construction of reservoirs, dams and canals.

A number of large rivers, which run in a generally west to east direction, ultimately drain the area. The largest of these is the Merrimack River, the mouth of which is located between Salisbury and Newburyport at the northern end of Plum Island. The Ipswich River, which empties into the ocean at the southern end of Plum Island, is highly significant, as it actually drains a greater portion of the study area than any other single river. Other large rivers in the study area include (from north to south): the Parker, Rowley, Essex, Danvers and Saugus rivers. In addition, these rivers have many tributaries, and many other small waterways run short distances, draining small coastal areas into the nearby ocean.

At the shore, the factors most responsible for the present coastal configuration have been post-glacial fluctuations in sea level and the associated processes of coastal erosion and deposition. North of Cape Ann, the coast is characterized by wide expanses of salt marsh, extensive tidal flats and barrier beaches of shifting sand dunes such as Plum Island and the Ipswich beaches. In contrast to this marsh and dune environment, the

coast from Cape Ann south to Swampscott, excluding the Salem/Beverly harbor, is considerably rockier, and lacks extensive salt marshes, mudflats, barrier beaches and large estuaries. The area within and adjacent to the Salem and Beverly harbors, between these two extremes, lacks a great deal of salt marsh and sand dune, but originally contained significant estuaries and tidal flats and is less rocky than Cape Ann.

The prehistoric environment of the study area was rich and diverse, and subject to significant changes since the first peoples entered the region over 10,000 years ago. Fluctuations in sea level due to glacial melting and isostatic rebound have significantly altered the coastline during this time (cf. Edwards and Merrill 1977). The coastal areas of today were once farther inland, and habitable dry land of 10,000 years ago is today under water. Climatic conditions and biotic communities have also fluctuated considerably during the last 12,000 years (cf. Ogden 1977).

Among the many natural resources available and utilized by the prehistoric inhabitants of Essex County were outcrops of stone used for the production of tools. The collection area is transected by two geological features that supplied high quality lithic raw materials: the Lynn Volcanics and Newbury Volcanics complexes. The Lynn Volcanics form a band of uplands along the northern rim of the Boston Basin between Waltham/Arlington and Marblehead. This formation includes numerous outcrops of felsites and metamorphosed sedimentary rocks that were used prehistorically. Among these are the Melrose Green "Felsite," Saugus Red to Maroon "Jasper," and the several varieties of the Lynn-Marblehead Felsites. Prehistoric access

to these lithic sources was probably by three routes: one along the coastline, the other two along the Saugus River and Mystic River drainage corridors (Anthony, Carty and Towle 1980:39). North of the Lynn Volcanics, the Newbury Volcanics complex outcrops in a northeast trending wedge-shaped belt in northeastern Essex County between Newbury and Topsfield (Shride 1979:148-9). Access to exploitable outcrops of Newbury Volcanic material may have been primarily along the Parker River and its tributaries.

In addition to lithic sources, Essex County supplied its prehistoric inhabitants with abundant and varied faunal and floral resources; both aquatic and terrestrial. Fish and marine mammals were available off the shore, and both freshwater and anadromous fish could be taken in considerable quantities in inland or estuarine waters. The salt marshes were (and are today) the breeding grounds for many species of fish. They have also been attractive to resident and migratory waterfowl and other birds. Today, as many as 30,000 ducks and geese can sometimes be seen in the vicinity of Broad Sound in a single day during spring and fall migrations (U.S. Fish and Wildlife Service 1981).

The shoreline and extensive mudflats were also a source of shellfish for prehistoric inhabitants, as the many coastal middens indicate. Among terrestrial fauna the White-tailed or Virginia deer, Odocoileus virginianus, was dominant economically throughout much of prehistory, and the present species are those characteristic of the Eastern temperate forest.

In summary, the variety of habitats within eastern Essex County - salt marsh, dune beach, rocky coast, estuary, forest, lake and stream - provided

a great variety of floral and faunal communitites and resources. Thus, the archaeological record for the study area represents some 10,000 years of adaptation to a dynamic, productive and heterogeneous environment.

V. Collection Bias

As a data set, the prehistoric assemblages inventoried at the Peabody Museum of Salem contain a number of biases. The biases have been induced by a combination of natural post-depositional processes, human activities and artifact collecting practices.

The most important natural agent has been the post-glacial rise in sea levels. This process has submerged an incalculable number of sites from the Paleo and Archaic periods. This problem creates a bias in site and artifact representation for the Museum collection in general. Less dramatic but equally ruinous have been various forms of surficial erosion such as wave and dune activity, stream and river erosion and slope wash. The region's acid soils bias artifact samples by selectively destroying bone, wood and other organic materials at most sites. Site destruction related to historic construction has been heaviest in the vicinity of harbors such as Salem and Newburyport, and at locations suited for early industrialization, which were usually situated adjacent to waterfalls or major waterways (e.g. Lowell, Lawrence). Growing population in general has witnessed an increase in residential development and consequent site destruction.

One post-depositional agent which has selectively destroyed certain forms of artifacts and certain sites is plowing. Although it has been

demonstrated that plowing may not completely destroy sites and that considerable archaeological information can be retrieved (c.f. Talmage et al. 1977), historic plowing practices can nevertheless contribute to archaeological distortion and bias. Plowing is particularly destructive to fragile artifacts such as ceramics and may also selectively destroy those materials deposited closest to the ground surface. Therefore, professionals and avocational collectors automatically deal with a sample which is more distorted than that which was originally deposited.

The factors mentioned above apply more or less equally to any archaeological collection within the study area. Later collections may be more affected by increased construction damage than earlier ones for which farming was the principal source of disturbance.

A major source of bias in the Peabody Museum of Salem collection lies in the varying methods employed by dozens of different collectors over the past 150 years. There is no means of accounting for the behavioral characteristics of so many collectors, but since two or three groups of collectors contributed a major percentage of the total inventoried collection, we can point out those biases which are most obvious.

As indicated above, the earliest group of collectors were those individuals associated with the Peabody Academy of Science and the Essex Institute in the mid 1800s. John Sears, John Robinson, Frederick Ward Putnam and Edward S. Morse were foremost among these. Many of the materials attributed to members of this group were collected on "outings" which were often attended by friends and family in an atmosphere of adventure and

camaraderie. These outings consisted of excavations which were specifically and purposely focused on a number of shell middens and burials in Ipswich, Newbury and Beverly. The resulting assemblages are neither representative samples of the sites from which they were derived nor of the region in general.

These sites probably received considerable scrutiny; in the case of burials, nearly complete samples were secured. However, in most cases it is not known how closely the collected materials are representative of the contents of the features from which they were taken, much less the entire site. With a collecting orientation toward collecting "museum specimens" and the employment of archaeological techniques prevalent at the time, it is likely that large, finely crafted artifacts, unbroken specimens, and nicely decorated ceramics are overrepresented in the samples.

Also, these middens and burials were located on the coast to the exclusion of inland areas. They were specialized features representing a limited range of activities and contained a limited range of artifact types. In addition, all of the burials and the predominant components of the shell middens appear to date from the Woodland and Contact periods. Therefore, sites and features oriented toward the exploitation of coastal resources and the burial of the dead, and sites of the later prehistoric and early historic periods are overrepresented in this part of the collection.

In contrast to the 19th century Academy group of collectors, the second group, comprised of Clark, Eldridge and the Vaccaros, collected at

over one hundred sites in all parts of Essex County, both inland and on the coast. They also made occasional forays into Middlesex County, Cape Cod and elsewhere. Clark appears to have collected more in plowed fields than did his successors, probably because there was more active farmland during his day. Therefore, his collection may tend to represent sites on early 20th century farmland. On the other hand, Eldridge and the Vaccaros, while cognizant of the archaeological potential of open plowed fields, frequently collected at a variety of construction sites which ranged from relatively small residential cellar holes to large commercial structures, schools, churches and roadways. These sites tended to be visited during the course of construction when they were already disturbed or in the process of disturbance. No additional subsurface testing was conducted and collecting at such sites was often limited to one or two visits when the cultural bearing strata were exposed. Such collecting activity yielded small assemblages; sometimes a site is represented merely by chipping debris, and precludes an opportunity to determine site boundaries or cultural affiliation. This practice has also resulted in an overrepresentation of sites located in areas where the most intense 20th century development has taken place and is closely linked to the ease of access by available roadways.

Besides concentrating on construction sites, Eldridge and the Vaccaros frequently collected at sand and gravel quarries; such sites were often exposed for a while and then subsequently destroyed. Often their collections represent the only evidence of prehistoric activity at such locations. The Bull Brook site in Ipswich is the best example of this type of collecting location. Because of this correlation, sites located on large kames and drumlins, from which sand and gravel are usually quarried, may be overrepresented in their sample of sites.

The artifact assemblages from Essex County as represented by these collections are also biased in other ways. Clark's collection, a sizeable portion of which was derived from the surface of plowed fields, probably contains the many typical forms of bias related predominantly to artifact visibility and preservation. Artifacts made on quartz or other bright colored stone and large objects such as ground stone tools should be over-represented, while ceramics, because of their fragmentary condition and color, should be poorly represented. An obvious bias in Clark's collection at the Museum is the lack of chipping waste, which either was not collected or failed to become part of the Museum assemblage. Eldridge and the Vaccaros, however, collected chipping waste and tool fragments, apparently attempting to collect artifacts of all types regardless of condition or esthetic value. In general, sites collected by Eldridge and the Vaccaros contain small samples of artifacts, Bull Brook being a significant exception. In many cases the size of the inventoried assemblage probably reflects the size of a foundation excavation or the extent of a quarrying operation. In other cases, the Museum has not yet obtained complete site assemblages because Eldridge and the Vaccaros retain sizeable private collections. It is probable that a high percentage of certain artifact types such as chipping waste and other undiagnostic specimens are in the Museum, while large percentages of other forms, particularly projectile points, have not yet been accessioned into the collection.

Clark, Eldridge and the Vaccaros of course were not the only collectors active during the 20th century, nor did the Museum staff have a monopoly on collecting during the 19th century. In fact, a significant proportion of the inventoried collection is derived from a great many individuals

who donated a single specimen or only a few artifacts to the Museum. Generally, these materials tend to be projectile points or forms of easily recognizable ground stone tools which were collected as isolated finds on local farms or from small private vegetable and flower gardens. For many of these specimens, town proveniences provide only a very general indication of their origins.

VI. Collection Analysis: General Artifact Categories

The following section summarizes the inventoried materials for each general artifact category represented at the Peabody Museum of Salem. The total of 22,672 artifacts inventoried includes all artifacts provenienced to sites located within Massachusetts (Table 1). In addition, artifacts that could not be assigned to a specific site location, but for which some locational information more specific than simple town provenience existed, were inventoried; these materials were assigned "landowner codes."

Not included in the inventory is the Paleo Indian material from Bull Brook, which is currently undergoing reanalysis. Artifacts with town provenience, or even less precise locational information were also not inventoried. A brief summary of the Museum's town provenienced materials appears in Appendix A.

Projectile Points

A total of 957 points were inventoried. This figure includes 431 points that were classifiable based on the typology designed by the prehistoric survey team (Anthony, Carty and Towle 1980a). Also inventoried were 362 points that could not be typed using the existing classification system, 115 point tips and 49 point midsection fragments. The range of projectile point types, their absolute quantities and relative frequencies are summarized in Table 2.

Projectile points comprise only 4.2% of the Peabody Museum of Salem collection compared with other collections previously inventoried: the Ben Smith collection, 10.4% (Johnson and Mahlstedt 1982a:30); the R.S. Peabody Foundation collection, 23.4%; the Peabody Museum, Harvard collection, 31.9%; the Bronson Museum collection, 58% (MHC 1981:31); and the Roy Athearn collection, 71.4% (Johnson and Mahlstedt 1982b:49). An important factor contributing to the apparently large differences among these figures is the enormous amount of chipping waste inventoried at the Peabody Museum of Salem, the Ben Smith collection and the R. S. Peabody Museum collection. Excluding chipping waste, projectile points comprise 17.8%, 32.4% and 33.9% of the respective collections.

The proportion of untyped points is unusually high in the inventoried part of this collection. The ratio of typed points to untyped points is 1.19:1. By contrast, in the Ben Smith collection this ratio is 2.17:1, and in the Roy Athearn collection the ratio is 3.77:1.

Chipped Stone Tools

A number of widely different tool types are subsumed under the general category of chipped stone tools. The most common forms at the Peabody Museum of Salem, excluding chipping waste, are varieties of cores, of which 279 were coded, including bifacial, prepared, and rough cores. The Saugus Quarry site (19-ES-256) alone accounts for 37% (103 specimens). All but one of these are of Saugus Jasper, and relate to the quarrying of this material and the initial stages of lithic manufacture at the site. A number of these specimens exhibit edge modification suggestive of reworking or utilization as edge tools.

Two other sites, both felsite quarries, contain large quantities of cores which reflect the nature of the activities performed there. These are the Devereux Beach site, Marblehead (19-ES-372) with 18 cores, and the Castle Rock site, Marblehead (19-ES-352) with 13 cores.

The second largest category of Chipped Stone tools is Bifacial Implement Blades, 180 of which were inventoried. These occur in various states of completion, but generally represent later stages of lithic manufacture than do Bifacial cores. As the assemblages from most of the sites are small, seldom were more than two Bifacial Implement Blades inventoried from one site. Notable exceptions are the Kernwood Knoll site, Salem (19-ES-408) with eleven specimens; Bull Brook, Ipswich (19-ES-80) with nine; Treadwell's Island, Ipswich (19-ES-98) with eight; Dodge's Farm, Wenham (19-ES-370) and Norwood Pond, Beverly (19-ES-437), each with seven.

In comparison with other inventoried collections, the sample of edge tools is relatively small (128); for example, the Ben Smith collection contains 468 edge tools (Johnson and Mahlstedt 1982a:30). Unifacially flaked specimens of variable shape are most prevalent, with unifacial and bifacial ovoid forms both common.

Chipping waste, calculated at approximately 17,291 specimens, comprises 76.3% of the inventoried part of the museum collection. The Saugus Jasper Quarry assemblage alone contains over 10,201 waste flakes, almost exclusively of Saugus Jasper. Three other sites contain chipping waste samples in excess of 300 pieces. These are: the Sewer site, Ipswich (19-ES-475), 969 pieces; Path Crossing site, Salem (19-ES-449), 385 pieces; Juniper Cove site, Salem (19-ES-406), 305 pieces. Almost all of the chipping waste in the collection is well provenienced, as most of it was collected by Museum staff in recent years in the course of their site identification and verification activities.

Ground Stone Tools

A total of 398 inventoried artifacts were classified as ground stone tools. Table 1 indicates the various subcategories within the ground stone tool classification. Almost each one of these subcategories, in addition to representing a range of internal variability, contains at least a few specimens that attest to the exquisite craftsmanship achieved by prehistoric stoneworkers. Many are truly "museum pieces" and have achieved a certain renown, having been illustrated in Willoughby (cf. 1935) and most recently in Snow (1981:74,177,184,286, 290,291,292).

One subcategory of interest is plummets, of which 53 were inventoried. Several of these are unusually large with some weighing several pounds, while retaining the typical morphology. Their size suggests that they were used for pelagic fishing or possibly as anchors.

A significant number of ground stone tools were accessioned by the Museum during the 19th and early 20th centuries. Often these artifacts were collected by persons with no archaeological training who may not have recognized the importance of other types of artifacts. As a result, a number of sites are represented by little more than a single ground stone tool such as an axe, adze or pestle.

Steatite Containers

Steatite or soapstone containers, considered diagnostic of the Late Archaic Period, were coded from six sites. Two complete vessels were inventoried: one specimen from West Peabody (PEAL05) and the other from a burial in Westport in Bristol County (WSPL02).

Ceramics

A total of 846 Native American ceramic specimens were inventoried; of these 633 are from sites in Essex County. Although thirty-six sites contain ceramics, a number of these contain single specimens and others only a few fragments. Such low densities do little more than indicate the existence of a ceramic component. Only one complete vessel was inventoried; this is from a grave at Bessome's Pasture, Marblehead (MARL10) (Hadlock 1949:Plate II).

Two sites together comprise over half of the ceramic sample. However, the Barley Neck Shellheap (19-BN-211) is in the town of Orleans, Barnstable County. The other site, Bull Brook (19-ES-80), contained one third of all the Essex County ceramics inventoried from the collection. The following sites have the largest ceramic samples: Barley Neck Shellheap, Orleans (19-BN-211), 213 pieces; Bull Brook, Ipswich (19-ES-80), 211 pieces; Ipswich Beach, Ipswich (IPSL27), 80 pieces; Castle Neck, Ipswich (IPSL21), 78 pieces; Sewer site, Ipswich (19-ES-475), 35 pieces.

The ceramic specimens exhibit a wide variety of tempers. Coarse mineral and coarse shell temper are particularly common, although fine mineral and shell, missing temper and various combinations of tempers are also present. Because of the highly fragmented nature of many of the sherds, decoration is not always detectable. While cord marking is the predominant form of exterior surface treatment, stamped, dentate, punctate decorations and combinations of different techniques are also present.

Human Osteological Remains

A total of 348 bones and fragments, identified as human skeletal material, were coded from six sites (see Appendix B). The number of specimens coded does not represent an absolute number of "bones," since human remains from a number of sites were not physically inspected. In such cases a single specimen was recorded to represent the existence of an unspecified number of human bones. Additional human remains may exist, as yet unrecognized, among assemblages of "faunal" remains.

Faunal Remains

A total of 1,699 specimens were coded as faunal remains. This figure represents a rough approximation, as large quantities of small bone fragments and tiny fish scales were only estimated. Although faunal remains are present at 23 sites, Treadwell's Island (19-ES-98) alone accounts for close to 93% of the total with 595 bone fragments and over 1,000 fish scales. This assemblage may represent the best sample for further analysis (see below).

Bone Artifacts

Fifty-nine bone artifacts, either intentionally fabricated bone points, or bone fragments which reveal evidence of utilization as tools were inventoried. The presence of worked bone correlates strongly with shell middens. Fifty-two specimens come from three shell middens, two of which, Eagle Hill (19-ES-84) and Treadwell's Island (19-ES-98), are in Ipswich. The third, the Barley Neck Shellheap (19-BN-211), is located in Orleans on Cape Cod.

Glass Beads

A total of 71 glass beads were inventoried; 61 of these are round glass beads from the Revere Beach Graves (19-SU-1). Glass beads, commonly obtained through early European contacts, are thus usually indicative of the Contact Period (see below).

Organic Materials

A very small but interesting sample of organic materials was inventoried. A sample of hair, reputedly the remains of a bearskin pouch (Hadlock 1949:64) comes from a grave in Bessome's Pasture, Marblehead (MARL10). Three nuts, identifiable by a botanist, are part of the assemblage from the Path Crossing site in Salem (19-ES-449). Also, an extremely small ear of corn was inventoried from Castle Neck (IPSL21). The conditions under which the nuts and corn were derived is not known, so their exact context is uncertain.

VII. Collection Analysis: Summary of Temporal/Cultural Phases

The inventoried portion of the Peabody Salem Museum archaeological collection contains archaeological evidence of over 10,000 years of human activity in Northeastern Massachusetts (Table 2). The collection represents a relatively large number of sites with few artifacts from a large geographical region. This contrasts markedly with previously inventoried collections such as the Smith, Athearn and Richardson collections which are large artifact samples from geographically restricted areas (Johnson and Mahlstedt 1982a,b; MHC 1981).

This section highlights, in a purposefully general fashion, the cultural/temporal sequence of coastal Essex County as represented by provenienced artifacts at the Museum. Based on a sample of 431 typed projectile points from over 283 sites, the detail in which the nature of prehistoric

occupation in the area can be discussed is decidedly limited. For each cultural period a listing of diagnostic projectile points, their absolute quantities, and the number of sites at which they occurred is presented. Since the inventory of the Peabody Museum of Salem contains material from 283 sites, only unusually large assemblages or sites will be discussed. A computer printout listing all the materials at every site is available at the MHC for review by interested parties.

Paleo Indian Period (ca. 12,000 - 9,000 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Fluted	3	---	3
Eden-Like	1	---	1
Total	4	.09	4

Despite the small number of inventoried points, Paleo Indian activity is documented better in Essex County than perhaps anywhere else in New England. The Bull Brook site in Ipswich (19-ES-80) alone has yielded over 175 Fluted points, preforms and fragments as well as a large sample of a variety of other Paleo Indian tools (Grimes 1980). Although much of the Paleo material is presently curated at the Museum, it was not made accessible to the survey team and therefore not inventoried. Had this material been inventoried, Fluted points would have been one of the most numerous point types in the Museum collection of provenienced sites. This fact illustrates why making even general statements about the prehistory of

a region based on a small sample is highly problematic; a single intensively collected site can profoundly influence the relative visibility of one or more components.

Other sites represented at the Museum which reveal evidence of Paleo Indian activity are: the Missile site, Middleton (19-ES-431), the North Ridge site, Ipswich (19-ES-294) and the Saugus Quarry site, Saugus (19-ES-256). Each of the sites yielded a single Fluted point, all of which were manufactured on Saugus Red "Jasper".

A single Eden-like point from the Dodge Farm in Hamilton (HAML03) was accessioned over 100 years ago, and is illustrated in Snow's The Archaeology of New England (1980:164f.).

Early Archaic Period (ca. 9,000 - 8,000 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Bifurcate Base	4	0.9	3

Bifurcate Base points have rarely been reported in Northeastern Massachusetts. Three sites from the Peabody Museum contain this point form: the Bull Brook site, Ipswich (19-ES-80) contains two, the most from a single site in the region; the Pine Swamp site, Ipswich (19-ES-306) and a site on Eastern Point, Gloucester (GLOL06) each contain a single specimen.

Middle Archaic Period (ca. 8,000 - 6,000 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Stark-Like	27	6.3	
Neville-Like	19	4.4	
Neville-Variant	24	5.6	
Archaic Stemmed	15	3.5	
Total	85	19.8	35

Middle Archaic Point types are recognizable from 35 identifiable sites. Three sites at which this component is best represented are: Dodge's Farm, Wenham (19-ES-370); Bull Brook, Ipswich (19-ES-80); and Danvers Center, Danvers (DANL03), which is likely to include several sites.

The addition of the Archaic Stemmed point to the typology appears to be a useful means of flagging Middle Archaic Period points in Essex County, as it was in the Taunton River Basin (Johnson and Mahlstedt 1982b:7,8). Defined as either a Neville-like or Neville-variant, but unassignable to either because of basal damage, this form increased the Middle Archaic sample by 18%, and is the sole evidence of Middle Archaic activity at a number of sites.

Late Archaic Period (ca. 6,000 - 3,000 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Otter Creek-Like	1	---	
Broad Eared (Vosburg)	1	---	
Archaic Notched (Brewerton)	25	5.8	
Small Stemmed (various)	97	22.6	
Small Triangle (Squibnocket)	62	14.4	
Atlantic-Like	33	7.7	
Susquehanna Broad-Like	9	2.1	
Wayland Notched-Like	12	2.8	
Orient Fishtail	9	2.1	
Total	249	57.5	80

Small Stemmed points were the most numerous form of points inventoried at the Peabody Museum of Salem, as they were in the other major collections previously inventoried. However, the utilization of quartz for the manufacture of Small Stemmed points has a noticeably lower incidence in this collection than in other large collections from Eastern Massachusetts. The Richardson collection from the Attleboro area, the Athearn collection from the Taunton estuary, the Ferguson collection from Heard Pond in Wayland, and the Smith collection from the Concord/Sudbury valley are dominated by quartz Small Stemmed points. Argillaceous stone was also a favored raw material, particularly in the Taunton estuary (MHC 1981:52,53; Johnson and Mahlstedt 1982a,b).

Less than 30% of the Small Stemmed points in the Peabody Museum of Salem collection are made of quartz; volcanics from one source or another were favored raw materials. If this is a true pattern in this region, the difference may be explained by the abundance of local volcanic sources in Northeastern Massachusetts compared with other areas.

Fifty-four projectile points of the Susquehanna Tradition, including Atlantic-like, Susquehanna Broad-like and Wayland Notched-like were coded from thirty-two sites. In addition, three Bifacial Implement Blades, similar in form and manufacture to Mansion Inn Blades, and a single specimen resembling a Boats Blade (cf. Dincauze 1968) were inventoried from four separate sites. At no site are Susquehanna Tradition artifacts numerous. The largest single assemblage is four Atlantic-like points which were salvaged from the Sewer site in Ipswich (19-ES-475) by the Museum staff in 1980. No evidence of Susquehanna Tradition type cremation cemeteries was encountered during the inventory. This is not surprising, however, as detailed information on features, essential for the identification of such sites, is typically lacking from surface collected assemblages.

Although Late Archaic projectile points are present from 80 sites, the following five sites have the greatest number of diagnostic specimens from this period: Bull Brook, Ipswich (19-ES-80), twenty-seven Late Archaic points including nine Archaic Notched; Pitman Farm on Naugus Head, Marblehead (MARL26), fourteen Small Stemmed points; Curtis Farm, Middleton (19-ES-269), nine assorted; Endicott Farm, Danvers (DANL12), nine assorted; Russell Farm, Danvers (DANL21), nine assorted.

Early Woodland Period (ca. 3,000 - 1,500 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Meadowood	6	1.4	5
Rossville	6	1.4	6
Total	12	2.8	11

Only two sites contained more than a single diagnostic point type from the Early Woodland: Willow Avenue, Salem (SALL34) with a Meadowood and a Rossville; and Danvers Center, Danvers (DANL03) with two Meadowood points. All but one of the sites containing evidence of the Early Woodland Period are multiple component sites. Burgess Point, Beverly (BEVL13) contained a single diagnostic point, a Meadowood, in its assemblage of five artifacts (two axes, one gouge, and one untyped point).

Middle Woodland Period (ca. 1,500 - 1,100 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Greene-Like	5	1.2	5
Woodland Corner Notched (Jack's Reef)	5	1.2	4
Large Pentagonal (Jack's Reef)	1	---	1
Woodland Stemmed (Fox Creek)	3	.7	3
Woodland Lanceolate (Fox Creek)	3	.7	3
Total	17	3.8	16

The low number of Early and Middle Woodland projectile points inventoried here also characterizes the Smith collection of the Concord/Sudbury region, but stands in marked contrast to the Lower Taunton River (Mahlstedt and Johnson 1982a,b). However, the Peabody Salem Museum contains a number of other types of artifacts not inventoried from these other areas, which hint at Early and Middle Woodland activity in Northeastern Massachusetts. Although ceramics are present at thirty-three sites, the coding system presently used is not designed to type ceramics per se (however, Vinette I may be present at a few sites). The ceramic category is best used at this stage simply as an indication of Woodland activity. In fact, the presence of a few sherds is the only indication of Woodland activity at a number of sites which otherwise evidence only Archaic activity. The use of worked mica, usually in the form of thin, purposefully cut sheets, is characteristic of many Middle Woodland Hopewell burials in the Midwestern United States (Willey 1966:275). A single worked sheet of mica is part of the assemblage from a site known as the Fort Pickering Grave site (19-ES-383) in Salem. It is possible that the worked mica cut-out represents an eastern representative of this form of Middle Woodland artifact. Additionally, platform pipes of carved stone, several of exquisite manufacture, also characteristic of the Hopewellian Cultural Complex in the Midwest, were inventoried from the following four sites: the Three Graves site, Beverly (BEVL17), 3 pipes; Revere Beach Graves, Revere (19-SU-1), Treadwell's Island, Ipswich (19-ES-98); and Adamanta Works, Salem (SALL09). Several of the grave sites and their contents have been previously described and illustrated (Snow 1980:286; Hadlock 1949; Willoughby 1935; Robinson 1947).

Late Woodland Period (ca. 1,100 - 500 B.P.)

Diagnostic Point Types	Number of Specimens	% of Total Typed Points	Number of Sites
Large Triangle (Levanna)	59	13.7	38

Late Woodland projectile points are found throughout the study area, although they rarely occur in numbers greater than one or two specimens per site. Two sites which are exceptions are Curtis Farm, Middleton (19-ES-269) with six points and Mackerel Cove, Beverly (19-ES-425) with four Late Woodland points.

Contact Period (ca. 500 - 400 B.P.)

Six sites are tentatively identified as Contact Period occurrences, attributed to this period on the basis of articles of European manufacture, specifically glass beads and various metal objects. In most cases little or no information accompanies the materials and their context remains uncertain. But, two of these are demonstrably Contact Period grave sites. The Bessome's Pasture Grave, Marblehead (MARL10) and the Revere Beach Graves (19-SU-1) are examples of richly furnished graves from the early Contact Period. The other sites, though less spectacular, are nonetheless potentially significant. The Kernwood Knoll site, Salem (19-ES-408) has three glass trade beads in an assemblage also containing diagnostic materials from the Middle and Late Woodland periods. A single glass bead is part of the assemblage at Juniper Cove, Salem (19-ES-406) which also contains Middle and Late Archaic materials. The cultural association of the remaining two sites are decidedly more uncertain as they can only be

assigned landowner codes and contain only those materials which suggest a Contact Period association. The Auburn Street site, Wakefield (WAKL18) is represented by a single copper pendant while an undescribed site on Plum Island, Ipswich (IPSL33) is represented solely by three glass trade beads. An isolated find of a lateen spoon at the Crane's Beach Dunes, Ipswich (IPSL32) could as easily be associated with Contact Period aboriginal activity as with European activity there (cf. Beaudry 1980).

VIII. Specific Sites and Research Potential

Forty-six percent (130) of the 283 sites and landowner codes contain diagnostic materials. However, for the most part the assemblages are very small. With small assemblages and the lack of representative samples, diagnostics, or site records, it is difficult if not impossible to determine site function, much less engage in comparative studies on an inter or intra site level. The principal informational value of much of the data lies in site location criteria and site distribution analysis. However, these studies too are hampered by many biases which are inextricably associated with many site assemblages and the collection in general. Only relatively generalized statements will be forthcoming from more detailed studies of much of the material.

A number of specific sites, however, retain considerable research potential if analyzed in a comprehensive fashion. Only a few of the largest sites and potential research topics are discussed below. Undoubtedly, many more sites could be considered significant or interesting, depending on individual research interests. That there is considerably more research potential in Essex County than is highlighted here goes without saying.

The Bull Brook site in Ipswich (19-ES-80) is certainly one of the most significant sites represented in the Museum. Although it has long been of interest to students of New England prehistory, only its Paleo component has received much attention (cf. Byers 1954, 1955, 1956, 1959, n.d.; Eldridge and Vaccaro 1952; Grimes 1980; Jordan n.d.). Analysis of the Paleo component is still being undertaken by John Grimes, the Assistant Curator of Ethnology at the Peabody Museum of Salem. The Bull Brook site also contains one of the Museum's largest and potentially informative collections pertaining to the entire span of known occupation in New England. Forty diagnostic points indicate that this site was also occupied or otherwise frequented during the Early, Middle, and Late Archaic as well as the Middle and Late Woodland periods. A sample of 211 ceramic sherds represents the largest sample from a provenienced site from Essex County in the Museum. The true significance of this site cannot be fully appreciated until its entire occupational sequence has been determined and interpreted.

The Saugus Quarry (19-ES-256) also retains considerable promise for analysis at a more detailed and discriminating level than that attempted by the survey team. The site naturally derives local and regional significance because of its Paleo component. However, the current assemblage which numbers in excess of 10,000 lithic specimens may well reflect raw material extractive techniques and a wide range of reduction sequences seldom evident in a single assemblage. That the site exhibits Late Archaic and Middle Woodland materials also suggests additional research value.

Presently there are six recorded Paleo Indian sites in Essex County. Additional Paleo occurrences at Shattuck Farm, Andover (19-ES-196) (Eugene Winter:personal communication) and at the Paisley site, Boxford (19-ES-163) have yet to be verified. Five of these sites are represented at the Peabody Museum of Salem. Presently the isolated finds of Fluted points at the North Ridge site, Ipswich (19-ES-294) and the Missile site, Middleton (19-ES-431) are all that is known about these sites. A rare, beautifully made Eden-like point, reputedly from the Dodge Farm in Hamilton (HAML03) has not yet had its location satisfactorily identified. The relatively high visibility of the Paleo component in Essex County clearly warrants further investigation.

A number of major shell middens were excavated by Museum staff during the late 19th century. Foremost among the existing assemblages from this era which may retain potential for continued research is the Treadwell's Island site, Ipswich (19-ES-98). Quantitatively, this is one of the largest assemblages at the Museum. A faunal sample of 595 specimens includes turtle and deer bone; analysis by a specialist will undoubtedly add to this list. Well over 1,000 fish scales are also available for analysis and identification. These materials are rarely preserved in such numbers. Although 128 pieces of shell represent a small sample from a shell midden, analysis of these may contribute considerable insight into what appears to have been a diversified subsistence base. Two hundred fifty-six human bones attest to the presence of at least one human burial here. The lithic assemblage, consisting of seventy-one specimens, contains diagnostic projectile points from the Late Archaic Period, including the Susquehanna Tradition as well as Late Woodland materials, and a wide variety of ground

stone tools, bifaces, edge tools, cores, chipping waste, and pounding stones. Bone points and worked and utilized bone shaft fragments further increase the variety of tool forms. Bone artifacts also increase the research value of this collection, as they are rarely preserved. During the late 19th century this site was briefly reported on by Robinson (1882) and Putnam (1882). Given the scope of our analysis, we could not assess to what degree the existing records and the physical evidence can be used to relate the evidence of subsistence activity, lithic manufacture, or mortuary practices with the specific cultural periods. It is evident, though, that this assemblage still possesses considerable research potential.

The Peabody Museum of Salem collection also contains artifact assemblages and/or skeletal material from twelve human burials from Northeastern Massachusetts (Appendix B). The existing documentation for many of these is poor and several contain mortuary and occupational components that cannot be separated. Several assemblages, however, clearly were derived strictly from a mortuary context. Analysis of burials, which are the result of a very specific set of activities, can often reveal the association of many different kinds of artifacts and behavior. Information on religious beliefs, mortuary practices, and aspects of social organization can often be gleaned from burial sites. Also, analysis of the osteological remains removed from burials can contribute to the understanding of a wide range of questions concerning the physical anthropology and demography of prehistoric populations. Existing museum collections can be particularly valuable resources for such studies because they have already been removed from the ground. By studying the contents from previously excavated burials, archaeologists can avoid the serious legal and ethical questions associated with such features (cf. Talmage 1982:60-65).

Another field of study with research potential pertains to lithic extraction, stone tool manufacturing technologies and raw material distribution. Even sites from which only chipping waste was inventoried can give information on raw material distribution. The raw materials on which most of the artifacts from Essex County were manufactured were locally derived. Few materials appear to have come from sources south of the Boston Basin, such as the Mattapan or Blue Hill River Quarries. Considering that two major volcanic complexes -- the Newbury and Lynn/Marblehead volcanics -- outcrop in Essex County this situation is not surprising. Many easily identifiable quarries which are known to have been utilized during prehistoric times, such as the Saugus Jasper Quarry and several smaller sites on Marblehead, are represented in the Museum collection. Except for the Saugus Quarry, most of these assemblages are not large; however, they do indicate the range of lithic variability from a single quarry as well as within a single parent member such as the Lynn Volcanics in general.

This lithic variability resulted in severe identification problems. Because of the wide variations in color and texture within single quarries, and the fact that materials from different quarries or from either parent complex can appear virtually identical (Kaye 1982:personal communication), it is difficult, if not impossible to develop source-specific raw material codes based on visual attributes, such as those designed for the Mattapan, Blue Hill River and Hornfels materials. Therefore, given the current raw material coding system, a great deal of material could be described no more specifically than "felsite" or "porphyritic felsite," designations which can apply equally to lithics from a variety of sources. Undoubtedly, further identification of quarry sites in the Newbury and Lynn volcanics, and

detailed petrological studies of materials from them, can improve our ability to distinguish particular sources and trace the distribution of their materials.

An interesting raw material, tentatively identified as Rhyolitic Tuff, and believed to be a member of the Newbury Volcanic Complex (Kaye 1982:personal communication), was identified at a number of sites throughout the study area. This material appears to have been utilized during the Middle and Late Archaic periods for the manufacture of projectile points and other chipped stone tools. Artifacts manufactured on Rhyolitic Tuff were first recognized on materials inventoried from the Concord/Sudbury area (Johnson and Mahlstedt 1982a:22), but have not yet been recognized in collections from south of the Boston Basin. A better understanding of this material and its apparently localized utilization is another topic for potential research.

IX. Management Recommendations

The Peabody Museum of Salem can play an important role in archaeological preservation in Essex County by serving as a regional repository for both artifacts and site information and by continuing to gather information on the region's archaeological resources. Curation of artifacts can be improved by completing the already initiated change from an ethnographic method of storage to storage by provenience. The museum's work with local collectors and avocational archaeologists has already produced excellent results and will continue to contribute to our understanding of Essex County prehistory. Thus far, a great deal of site locational information has been obtained through this method. Verification of

this information would be an important step in this process. Further work with collectors, particularly collections analysis, can add information on temporal and cultural components, site size and site function. Such information is an important complement to the site locational data, which by itself is very sketchy. Survey and planning grants from the Massachusetts Historical Commission should be made available to further such work.

Based on an overview of site locations in Essex County, two broadly defined habitats are noted as exhibiting a high probability of containing archaeological sites. These are elevated areas within and adjacent to the salt marshes and barrier beaches of the Essex County coast and elevated sandy knolls near lakes, streams and swamps in the interior. Sites of the former type can yield information on prehistoric exploitation of marine, estuarine and salt marsh resources and how this exploitation changes over time. Since many of these sites contain shell middens, they often exhibit excellent preservation of bone, shell and other organics; thus information on subsistence, seasonality, diet and non-lithic technology can be obtained.

Because much of Essex County's salt marsh and barrier beach is protected by Federal and State restrictions or by outright public ownership (e.g. Parker River National Wildlife Refuge), excellent opportunities exist for protecting significant sites within these areas from development-related destruction. Threats from natural erosive processes may be further studied by survey and site examination. Additional archaeological survey and testing should be designed to assess site integrity, determine cultural and temporal components, activities represented and quality of preservation.

Such information can be useful in nominating archaeological properties to the National Register of Historic Places, providing them with additional protection.

Well drained sandy elevations in the interior, often surrounded by marshy lowlands (e.g. Bull Brook) also exhibit considerable potential for containing archaeological remains spanning the entire duration of prehistoric occupation in the Northeast. Large multi-component sites such as Bull Brook can yield information on a range of topics including settlement pattern, tool assemblages and stylistic variability. Sites in these locations are endangered by sand and gravel quarrying, which has already destroyed numerous sites including Bull Brook, and residential development, for which well drained elevations are ideal. Because most quarrying operations and residential developments are privately funded and require no Federal or State permitting, existing preservation legislation does not provide for archaeological review and mitigation. Successful mitigation can be achieved in many cases by cooperation between developers and the archaeological community. The Peabody Museum of Salem can play an important role in such efforts by continuing to identify and gather information on archaeological sites, keeping informed on the status of threatened sites, contributing to mitigation efforts such as in the case of the Sewer site and serving as a regional repository and curatorial facility.

X. Summary

The inventory of the Peabody Museum of Salem archaeological collection has greatly increased our knowledge of specific categories of information

concerning the prehistoric resources of eastern Essex County. Most importantly, over 200 new site locations and dozens of new landowner code locations are now incorporated into the files of the Massachusetts Historical Commission. Additionally, new, more accurate locational information has been obtained for a number of previously recorded sites. At a minimum, this locational data confirms the archaeological sensitivity of many areas, and provides a more effective basis for review of proposed public undertakings there.

Many of these new locations are represented by small, incomplete and biased samples of artifacts; thus, information on temporal components and activities is often incomplete or non-existent. However, several sites are represented by large assemblages which in some cases may approach a complete sample of a site or portion of a site. Other sites, while not represented by quantitatively large assemblages, provide excellent examples of special activities such as burial of the dead and the quarrying of stone. In addition, a number of unusual or exotic artifacts are curated at the museum.

The Peabody Museum of Salem is currently engaged in a study of prehistoric settlement patterns and archaeological sensitivity in southeastern Essex County. The project will involve an inventory of collections that remain in private hands, and should add a great deal of information concerning the contents of the sites in the region. Ideally, that project and this report will complement one another to provide a greatly improved corpus of data as well as a firm basis for establishing preservation priorities in eastern Essex County.

TABLE 1

INVENTORIED ARTIFACTS BY ARTIFACT CLASS

<u>ARTIFACT CLASS</u>	<u>QUANTITY</u>	<u>% OF COLLECTION</u>
PROJECTILE POINTS		
Typed	431	
Untyped	362	
Point Tips	115	
Midsections	<u>49</u>	957
		4.2
CHIPPED STONE		
Bifaces	180	
Edge Tools	128	
Pounding Stones	94	
Cores	279	
Perforators	43	
Other	<u>7</u>	731
		3.2
CHIPPING WASTE	17,291(±)	76.3(±)
GROUND STONE TOOLS		
Axe/Adze/Gouges	162	
Pestles	42	
Plummets	53	
Atl-Atl Weights	8	
Pendant/Gorgets	14	
Ulus	8	
Grooved Stones	30	
Pipes	9	
Miscellaneous	<u>72</u>	398
		1.8
STEATITE CONTAINERS		
Fragments	4	
Complete Vessels	<u>2</u>	6

CERAMICS		
Prehistoric	846	
Historic	<u>22</u>	868
		3.8
GLASS BEADS	71	---
SHELL (two shell ornaments)	172	---
FAUNA	1,699(±)	7.5(±)
BONE ARTIFACTS	59	---
HUMAN REMAINS	358	1.5
ORGANIC	11	---
GUNFLINTS	<u>9</u>	---
TOTALS	<u><u>22,672</u></u>	<u><u>100</u></u>

TABLE 2
INVENTORIED PROJECTILE POINTS

<u>Point Type</u>	<u>Number of Specimens</u>	<u>% of Typed Points</u>
FLUTED	3	
EDEN-LIKE	1	
BIFURCATE BASE	4	
STARK-LIKE	27	6.3
NEVILLE-LIKE	19	4.4
NEVILLE-VARIANT	24	5.6
ARCHAIC STEMMED	15	3.5
OTTER CREEK-LIKE	1	
BROAD EARED	1	
ARCHAIC NOTCHED	25	5.8
SMALL STEMMED	97	22.6
SMALL TRIANGLE	62	14.4
ATLANTIC-LIKE	33	7.7
SUSQUEHANNA-BROAD-LIKE	9	2.1
WAYLAND NOTCHED-LIKE	12	2.8
ORIENT FISHTAIL	9	2.1
MEADOWOOD	6	1.4
ROSSVILLE	6	1.4
GREEN-LIKE	5	1.2
WOODLAND CORNER NOTCHED	5	1.2
LARGE PENTAGONAL	1	
WOODLAND STEMMED	3	
WOODLAND LANCEOLATE	3	
LARGE TRIANGLE	59	13.7
 TOTAL TYPED POINTS	431	100
 UNTYPED POINTS	362	
POINT TIPS	115	
POINT MIDSECTIONS	49	
 TOTAL	<u>957</u>	

APPENDIX A

SUMMARY OF TOWN PROVENIENCED MATERIALS (NOT INVENTORIED)

Beverly: ca. 50 artifacts
Includes points, chipped stone tools, ground stone tools, bone artifacts

Danvers: ca. 250-300 artifacts
Includes points, chipped stone tools, ground stone tools, bone artifacts, shell ornament

Essex: ca. 150 artifacts
Includes points, chipped stone tools, ground stone tools, ceramics
Principal collector: John C. Clark, 20th century

Groveland: 5 artifacts
Includes points, chipped stone tools
Principal collector: John H. Sears, 1882

Hamilton: 18 artifacts
Includes points, ground stone tools

Ipswich: ca. 1200-1400 artifacts
Includes points, chipped stone tools, ground stone tools, ornaments, ceramics, metal artifacts
Principal collectors: O. C. Willcomb, Josiah Willcomb, D. Rugg, 19th century

Lynn: ca. 25 artifacts
Includes points, ground stone tools, steatite container fragments
Principal collector: Nathaniel Vickary, 19th century

Marblehead: ca. 600-700 artifacts
Includes points, chipped stone tools, ground
stone tools
Principal collectors: Essex Institute, Eleazer
Doliner, 19th century, J. H. Gregory, n.d.

Middleton: ca. 150 artifacts
Includes points, chipped stone tools, ground
stone tools

Nahant: 8 artifacts
Includes all grooved stones
Collector: Nathaniel Vickary, 19th century

Newburyport: ca. 150 artifacts
Includes points, chipped stone tools, ground
stone tools

Salem: ca. 100 artifacts
Includes points, chipped stone tools, ground
stone tools, effigy

Saugus: ca. 50 artifacts
Includes points, ground stone tools

Swampscott: 3 artifacts
Includes point, gunflint, atl-atl weight

Wakefield: ca. 250 artifacts
Includes points, chipped stone tools, ground
stone tools, metal artifacts
Principal collector: J. H. Carter

Wenham: ca. 175 artifacts
Includes points, chipped stone tools, ground
stone tools, "birdstone," platform pipe
Principal collector: G. R. Small

APPENDIX B

GRAVES AND CEMETERIES

Treadwell's Island, Ipswich (19-ES-98)

Museum Collection includes human skeletal remains and many artifacts not associated with the burial. Diagnostic artifacts suggest Late Archaic and Late Woodland activities. Site includes shell midden and burial (see Robinson 1882; Putnam 1882).

Johnson Spring, Peabody (19-ES-233)

Museum has artifacts, many of which are not associated with burials. Site includes occupation area and burials. Additional material present at the R. S. Peabody Foundation, Andover. Location of osteological material not identified (see Bullen 1950).

Ipswich Bluffs, Plum Island, Ipswich (19-ES-308)

Undescribed site. Museum possesses child's skeleton and semi-lunar knife from unknown context.

Sewer Site, Ipswich (19-ES-475)

Site included occupation area, shell midden and burial which were severely disturbed by bulldozers prior to recovery. Museum possesses human osteological remains and diagnostic artifacts which include Late Archaic, Middle and Late Woodland material.

New March Street, Ipswich (19-ES-92)

Museum has human skeletal remains. No other material from this site inventoried (see Starbuck et al. 1979:64).

Revere Beach Graves, Revere (19-SU-1)

Museum possesses large assemblage of mortuary artifacts from several graves which appear to be from the Middle Woodland and Contact Periods (see Hadlock 1949:66-68 and Snow 1980:74,84). Additional material from this site is at the Peabody Museum of Archaeology and Ethnography, Harvard.

Fort Pickering Grave, Winter Island, Salem (19-ES-383)

Museum has mortuary artifacts and possibly human skeletal remains. Use of mica cut-outs suggests Middle Woodland burial. Site includes occupation area and burial which can be segregated from each other.

Three Graves, Beverly (BEVL17)

Site encountered in the late 19th century. Assemblage at Museum includes three stone pipes which may be Middle Woodland. The present location of the skeletal material was not determined (see Hadlock 1949; Robinson 1947; Bullen 1947).

Adamanta Works, Salem (SALL09)

Collection contains no osteological material. Site probably includes burial and occupation. At least two cultural components, Middle Archaic and Woodland, are identifiable in this small assemblage which also includes a bone point.

Naugus Head, Marblehead (MARL27)

Museum has human skeletal remains and other artifacts from an uncertain context. This site designation may include several sites on Naugus Head.

Bessome's Pasture, Marblehead (MARL10)

Variety of Contact Period grave goods removed in the late 1880s from a large burial containing at least five individuals. Location of skeletal material not determined (see Hadlock 1949).

Ipswich Beach, Ipswich (IPSL27)

Museum collection includes child's skeleton which exhibits copper staining and a number of artifacts from an uncertain context. This undescribed site may include a number of loci on Ipswich Beach.

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